

What is claimed is:

[Claim 1] 1. A transmission comprising:

- an input shaft;

- an input cog assembly mounted to the input shaft, the input cog assembly including a plurality of varying diameter input cogs arranged sequentially;

- an output shaft disposed substantially parallel to the input shaft;

- an output cog assembly mounted to the output shaft, the output cog assembly including a plurality of varying diameter output cogs arranged sequentially;

- a chain linking one of the plurality of the input cogs and one of the plurality of output cogs disposed opposite the one of plurality of input cogs for transmitting power from the input cog assembly to the output cog assembly,

- the chain, in operation, having a high-tension side and a low-tension side; and

- a derailleur engageable with the low-tension side of the chain to laterally urge the chain from a current output cog to a destination output cog, the input and output cog assemblies disposed in close proximity to each other and in a complementary arrangement relative to each other with the plurality of input cogs substantially aligned with the plurality of output cogs in a paired arrangement such that in operation the high-tension side of the chain automatically shifts to the input cog directly opposite the destination output cog after the derailleur laterally displaces the chain from the current output cog to the destination output cog.

[Claim 2] The transmission of claim 1 further comprising an input device concentric with the output shaft and connected to the input shaft with a first flexible torque-transmitting element and an output device connected to the output shaft with a second flexible torque-transmitting element.

[Claim 3] The transmission of claim 2 wherein the input device comprises a crank assembly.

[Claim 4] The transmission of claim 3 further comprising a crank input cog concentric with the output shaft, and a crank output cog mounted to the input shaft, the first flexible torque-transmitting element linking the crank input cog to the crank output cog.

[Claim 5] The transmission of claim 1 wherein the input device comprises a crank assembly mounted to the input shaft.

[Claim 6] The transmission of claim 1 wherein a gear ratio is defined by a pair of input and output cogs in substantial alignment with each other.

[Claim 7] The transmission of claim 1 further comprising a housing mountable to a bicycle frame for enclosing at least a portion of the transmission.

[Claim 8] The transmission of claim 1 wherein the output device is a bicycle wheel, the transmission further comprising a wheel input cog mounted to the output shaft, and a wheel output cog mounted to the wheel, the second flexible torque-transmitting element linking the wheel input and output cogs.

[Claim 9] The transmission of claim 9 wherein the wheel input and output cogs are in substantial alignment with each other.

[Claim 10] A transmission comprising:

an input shaft;

an input cog assembly mounted to the input shaft, the input cog assembly including a plurality of input cogs;
an output shaft disposed substantially parallel to the input shaft;
an output cog assembly mounted to the output shaft, the output cog assembly including a plurality of output cogs,
one of said input and output cog assemblies comprising cogs of varying diameter arranged sequentially;
a chain linking one of the plurality of input cogs to one of the plurality of output cogs disposed opposite the one of the plurality of input cogs for transmitting power from the input cog assembly to the output cog assembly,
the chain, in operation, having a high-tension side and a low-tension side; and
a derailleur engageable with the low-tension side of the chain to laterally urge the chain from a current output cog to a destination output cog,
the input and output cog assemblies disposed in close proximity to each other and in a complementary arrangement relative to each other with the plurality of input cogs substantially aligned with the plurality of output cogs in a paired arrangement such that in operation the high-tension side of the chain automatically shifts to the input cog directly opposite the destination output cog after the derailleur laterally displaces the chain from the current output cog to the destination output cog.

[Claim 11] The transmission of claim 10 further comprising an input device concentric with the output shaft and connected to the input shaft with a first flexible torque-transmitting element and an output device connected to the output shaft with a second flexible torque-transmitting element.

[Claim 12] The transmission of claim 11 wherein the input device comprises a crank assembly.

[Claim 13] The transmission of claim 12 further comprising a crank input cog concentric with the output shaft, and a crank output cog mounted to the input shaft, the first flexible torque-transmitting element linking the crank input cog to the crank output cog.

[Claim 14] The transmission of claim 10 wherein the input device comprises a crank assembly mounted to the input shaft.

[Claim 15] The transmission of claim 10 wherein a gear ratio is defined by a pair of input and output cogs in substantial alignment with each other.

[Claim 16] The transmission of claim 10 further comprising a housing mountable to a bicycle frame for enclosing at least a portion of the transmission.

[Claim 17] The transmission of claim 10 wherein the output device is a bicycle wheel, the transmission further comprising a wheel input cog mounted to the output shaft, and a wheel output cog mounted to the wheel, the second flexible torque-transmitting element linking the wheel input and output cogs.

[Claim 18] The transmission of claim 17 wherein the wheel input and output cogs are in substantial alignment with each other.